From the draft specification, I recommend you simplify Tables 1 and 2 and replace with this set of criteria:

ENERGY STAR Climate Zone	Measure of Insulating Value		Solar Transmission
	Emissivity, or	Storm Panel Glass only U-Factor	
All	0.16	0.66	any

Note that the emittance spec has been lowered from the original suggested value of 0.22 to 0.16.
The energy savings analysis work to justify the program was run at an emittance of 0.15.
Where's the justification to allow the center of glass U-Factor for the storm + single pane to increase about 0.02?

Second change is to add center of glass U-Factor as an alternative criteria. This value would come from a Window program U-Factor simulation of the storm panel glazing.
A simple insulating glass unit (2 lites of clear glass, no gas fill, "skinny" airspace) will have better performance than any monolithic low-E panel.
I can't speak to the viability of putting IG into a storm panel, but this would be far more cost effective than the laminated glass options suggested in Appendix B of the criteria analysis report.

For multiple reasons, I've dropped the solar criteria all together.

As I mentioned in my earlier comments, I would consider only the i89 glass as a viable option from the list of Cardinal products in Appendix B of the criteria analysis report.
The 6 laminated glasses suggested for Southern include an embedded coating, extra cost laminate options (tinted PVB or SGP) and a layer of exposed i89. Expensive!

Did the researchers consider if, or how, the storm panel would be opened to match the ventilation schedules that are part of the Resfen program?
If the storm panel isn't opened in concert with the primary window venting air-conditioning loads will be underestimated. This is critical to justifying the passive solar benefit in the north.

The solar criteria suggested by the storm panel program conflicts with the windows program in climate zone 4 (North Central).

The Resfen program doesn't report fan energy, which can be a significant fraction of the total HVAC expense. Northern values that "suggest" a passive benefit are incomplete without this energy.

Using the data from the analysis report, I performed a 2-paramter linear regression similar to what was used in the windows program to evaluate passive solar benefits in 6 of the locations.
See attached example for Minneapolis. U-Factors for the 17 combinations ranged from 0.88 to 0.26 and SHGC from 0.61 to 0.42.
The yellow highlights in cell F23 is the solar scalar (m2) for the existing house column. Cell F27 (also yellow) is for the new house data.
Note that both values are positive. This means that any increase in SHGC will increase energy, which invalidates the draft criteria for climate zone 6.
Only Duluth (climate zone 7) has a negative m2, an indication that passive solar gain could be beneficial.

The Resfen work suggests minimal differences between “regular” low-E and “solar” low-E in all locations except climate zone 2 (Houston). I suspect that there will be few storm panel applications in these hot climates (window films seem like a better retro-fit opportunity). Combined with the lack of appreciable passive savings in the north I recommend that the complexity of adding solar requirements won’t be worth the increased program complexity.

On the MSP attachment note the red text for the non-thermally broken low-E storm panel over a metal frame window. The savings are virtually the same as clear glass in a thermal break mount (cells J15 and K15). There needs be more than “guidance” to close this loophole. Either mandate thermal breaks or limit program to non-metal base windows?

Location	Passive?
Duluth	Yes

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